Securing Embedded Devices

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Security For Embedded Markets

Embedded represents a complex ecosystem of regulations, technologies and realities

Security Threats are increasing for Embedded Devices

Security has emerged as a key platform value

- Regulations, compliancy are changing the security, privacy and safety landscape for embedded systems
- Security awareness and design must grow

Security will continue to define opportunity for growth and innovation in embedded systems

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Increasing Embedded Device Security Threats

Pentagon: Y

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Stuxnet Cyberattack on Iran Arms Hackers with New Ideas

Oct 11, 2010 | 5:53 PM ET | By Stuart Fox, SecurityNewsDaily Staff Writer

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security brea
as "the most

Security researchers hac

Water treatment plant hacked

Hacking the Car: Cyber Security Risks Hit the Road

By Josie Garthwaite | Mar. 19, 2010, 12:00am PDT | 8 Comments

Experts hack power grid in no time

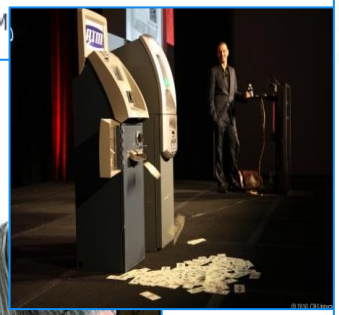
Basic social engineering and browser exploits expose electric producti

Security researchers to unveil pacemaker, medical implant hacks

st of your friends.

'Smart' utility meters have security h
be hacked, expert finds

Published: Friday, March 26, 2010, 3:31 PM



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Wednesday, March 26, 2008

Clear Channel electronic billboards get hacked UPDATE: no they didn't, maybe

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Industrial virus revives power grid hacking fears

Safety of power plants and distribution in question

By Jaikumar Vijayan | Computerworld US

Published: 10:05 GMT, 27 July 10

Last week's disclosure of a sophisticated malware program targeting control system software from Siemens AG has renewed long-standing

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August 31, 2010 11:07 AM PDT

Cars: The next hacking frontier?

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geared to bring attention to the possibility of grid hacking

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, 2010 | 04:47 PM

ly Jackson Higgins

DarkReading

Introducing: Experimental Security Panorama (ESP) Workshop

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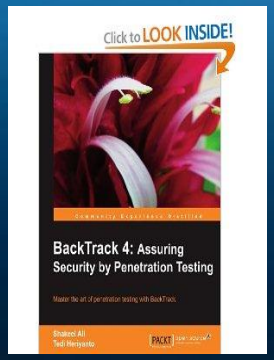
“How to” guides abound for hacking embedded device h/w

With physical access to the h/w, hackers attempt to: (examples)

- Read JTAG info to learn vulnerabilities
- Extract and decompile from ROMs initialization code, steal keys, learn configuration options
- Redirect boot to infected local sources (e.g. CD, USB)

With remote access to h/w, hackers attempt to: (examples)

- Redirect boot to infected remote sources (e.g. image on internet)
- Subvert management interfaces to gain supervisor privilege
- Subvert firmware patching processes to revert to older vulnerable versions of firmware (e.g. BIOS)



Embedded systems are no longer protected by ignorance or isolated networks

Protecting against S/W attacks

With connected access to the s/w, hackers attempt to disrupt device operation by: (examples)

- Unauthorized login/access
- Malformed network packets or expected I/O data
- Denial of service attacks
- System resets

With remote access to s/w, hackers attempt to: (examples)

- Reconfigure policies, configurations and steal keys
- Manipulate behavior in an attempt to disrupt and possibly destroy device
- Subvert patching processes to replace known good applications with malware

Embedded devices are under attack with hundreds of examples highlighted within the news daily

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Embedded System Challenges

Maintaining Security and Control Across the Lifecycle

Device Manufacturer	Distributor/Dealer	Device Owner

- Patching
- Problem/Resolution
- Change Control

- Customization
- Support
- Patching

- Compliance
- Performance
- Manageability

Security, Control, & Compliance

Driving Security Into Embedded Systems

Create security awareness in embedded system design and deployment

Delivering successful security features affects the entire product lifecycle from product design to deployment to end of life

- Security must be designed into products
- The underlying technologies matter
- The *human factor* **cannot** be disregarded

A well managed system is a secure system

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Security Innovation with Intel® Core™ Processors

Creating more secure products using Intel Technology

- Intel® Anti Theft Technology
- Intel® Trusted Execution Technology
- Intel® Advanced Encryption Standard New Instructions
- Intel® Digital Random Number Generator

Intel security technologies leverage hardware protections

Intel continues to support and drive security standards and policy

Increase the security, privacy and reliability of embedded systems with Intel® Core™ Processors*

* 1st and/or 2nd generation Intel® Core based processors

BACKUP


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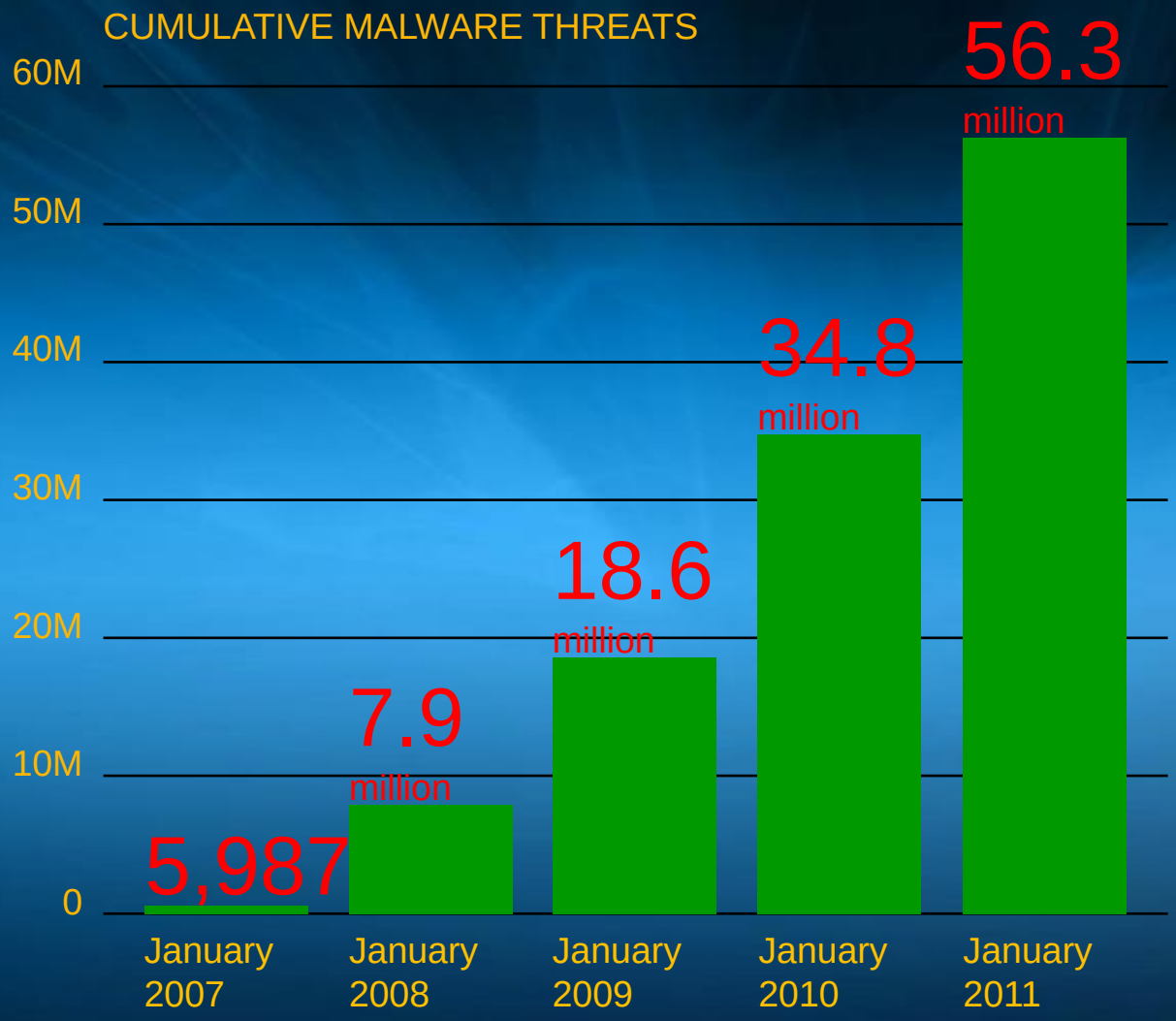
Unprecedented Malware Growth



Source: McAfee Labs

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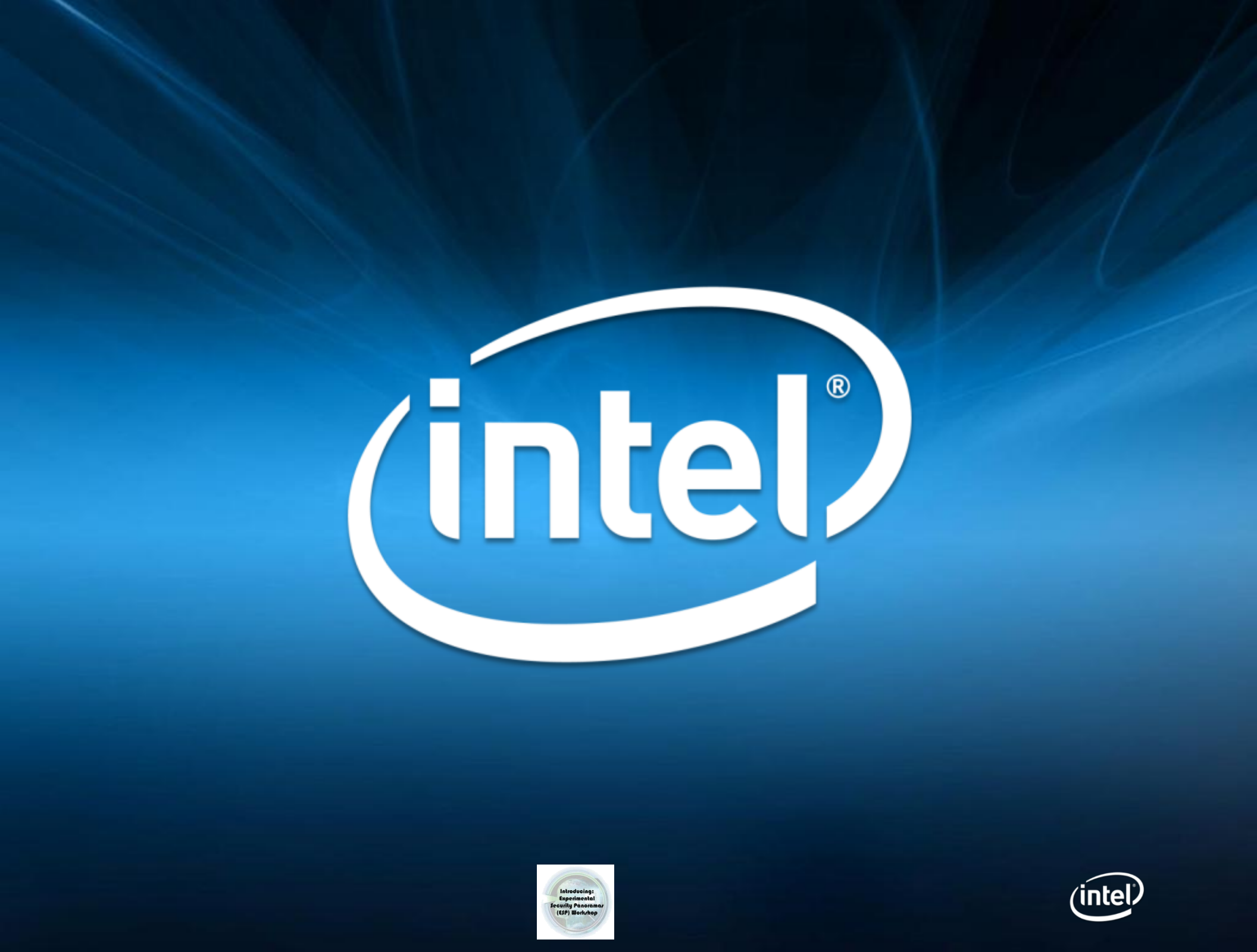
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